

1 QUINN EMANUEL URQUHART & SULLIVAN, LLP

David Bilsker (Bar No. 152383)

2 davidbilsker@quinnemanuel.com

50 California Street, 22nd Floor

3 San Francisco, California 94111-4788

Telephone: (415) 875-6600

4 Facsimile: (415) 875-6700

5 Kevin Johnson (Bar No. 177129)

kevinjohnson@quinnemanuel.com

6 555 Twin Dolphin Dr., 5th Floor

Redwood Shores, California 94065

7 Telephone: (650) 801-5000

8 Facsimile: (650) 801-5100

Attorneys for Plaintiffs

9 BIO-RAD LABORATORIES, INC. AND

LAWRENCE LIVERMORE NATIONAL

10 SECURITY, LLC

11 UNITED STATES DISTRICT COURT

12 NORTHERN DISTRICT OF CALIFORNIA

13 SAN FRANCISCO DIVISION

14 BIO-RAD LABORATORIES, INC. AND
15 LAWRENCE LIVERMORE NATIONAL
SECURITY, LLC,

16 Plaintiffs,

17 vs.

18 10X GENOMICS, Inc.

19 Defendants.
20
21
22
23
24
25
26
27
28

CASE NO. 3:17-cv-4339

COMPLAINT

PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

1 Plaintiffs Bio-Rad Laboratories, Inc., ("Bio-Rad"), and Lawrence Livermore National
2 Security, LLC ("LLNS") (collectively "Plaintiffs") by and through their attorneys, and for their
3 Complaint against 10X Genomics, Inc. ("10X" or "Defendant"), hereby alleges as follows:

4 **PARTIES**

5 1. Bio-Rad is a Delaware corporation with its principal place of business in Hercules,
6 California.

7 2. LLNS is a Delaware corporation with its principal place of business in Livermore,
8 California.

9 3. On information and belief, 10X Genomics is a Delaware corporation with a
10 principal place of business at 7068 Koll Center Parkway, Suite 401 Pleasanton, California 94566.

11 **JURISDICTION AND VENUE**

12 4. Plaintiffs bring this action seeking damages arising out of the infringement by
13 Defendant of U.S. Patent No. 9,089,844 ("the '844 patent"), U.S. Patent No. 9,126,160 ("the '160
14 patent"), U.S. Patent No. 9,216,392 ("the '392 patent"), U.S. Patent No. 9,347,059 ("the '059
15 patent"), U.S. Patent No. 9,500,664 ("the '664 patent"), U.S. Patent No. 9,636,682 ("the '682
16 patent"), and U.S. Patent No. 9,649,635 ("the '635 patent") (collectively, the "Asserted Patents")
17 arising under the Patent Laws of the United States, Title 35 of the United States Code.
18 Accordingly, this Court has jurisdiction over the subject matter of this action pursuant to 28
19 U.S.C. §§ 1331 and 1338(a).

20 5. This Court has personal jurisdiction over Defendant because Defendant has
21 committed acts of infringement within this District. Moreover, Defendant has substantial contacts
22 with the forum as a consequence of conducting business in California and having a principal place
23 of business in Pleasanton, California. Upon information and belief, Defendant manufactures, uses,
24 sells, and/or offers to sell in, and/or imports into, the United States, droplet based emulsion
25 system, including the Chromium™ and GemCode products.

26 6. As set forth above, Defendant has committed acts of infringement and has a regular
27 and established place of business in this judicial district. Venue therefore lies in the United States
28 District Court for the Northern District of California pursuant to 28 U.S.C. §§ 1391(b)(1) and (2).

INTRADISTRICT ASSIGNMENT

7. This is an Intellectual Property Action to be assigned on a district-wide basis pursuant to Civil Local Rule 3-2(c).

FACTUAL ALLEGATIONS

The Asserted Patents

8. On July 28, 2015, the '844 patent, titled "System For Forming Emulsions," was duly and lawfully issued by the United States Patent and Trademark Office ("USPTO"). Bio-Rad is the owner of the '844 patent. A copy of the '844 patent is attached hereto as Exhibit A.

9. On September 8, 2015, the '160 patent, titled "System For Forming An Array Of Emulsions," was duly and lawfully issued by the USPTO. Bio-Rad and LLNS are co-owners of the '160 patent and Bio-Rad is an exclusive licensee of LLNS's interest in the '160 patent. A copy of the '160 patent is attached hereto as Exhibit B.

10. On December 22, 2015, the '392 patent, titled "System For Forming An Array Of Emulsions," was duly and lawfully issued by the USPTO. Bio-Rad and LLNS are co-owners of the '392 patent and Bio-Rad is an exclusive licensee of LLNS's interest in the '392 patent. A copy of the '392 patent is attached hereto as Exhibit C.

11. On May 24, 2016, the '059 patent, titled "Methods And Compositions For Nucleic Acid Analysis," was duly and lawfully issued by the USPTO. Bio-Rad is the owner of the '059 patent. A copy of the '059 patent is attached hereto as Exhibit D.

12. On November 22, 2016, the '664 patent, titled "Droplet Generation For Droplet-Based Assays," was duly and lawfully issued by the USPTO. Bio-Rad is the owner of the '664 patent. A copy of the '664 patent is attached hereto as Exhibit E.

13. On May 2, 2017, the '682 patent, titled "System For Generating Droplets – Instruments and Cassette," was duly and lawfully issued by the USPTO. Bio-Rad is the owner of the '682 patent. A copy of the '682 patent is attached hereto as Exhibit F.

14. On May 16, 2017, the '635 patent, titled "System For Generating Droplets With Push-Back To Remove Oil," was duly and lawfully issued by the USPTO. Bio-Rad is the owner of the '635 patent. A copy of the '635 patent is attached hereto as Exhibit G.

Background

15. David and Alice Schwartz started Bio-Rad in 1952 in a 1,600 square foot Quonset hut in Berkeley, California as a research-focused company to deliver life science products and services to identify, separate, purify, and analyze chemical and biological materials. The company went public in 1966 and expanded into the clinical diagnostics market soon thereafter. Bio-Rad quickly established itself as a leader in the field of life science research and clinical diagnostics, and today many of Bio-Rad's diagnostics products and tools used in the biotechnology industry are recognized as the gold standard.

16. One diagnostic tool that is heavily used by those working in biotechnology is Polymerase Chain Reaction ("PCR"). PCR is a method of amplifying genetic material such as DNA to produce multiple copies of the starting DNA so that a sufficient amount of material will exist for analysis. The inventor of PCR, Kary Mullis, won the Noble Prize in Chemistry for his discovery of PCR.

17. While a powerful tool, traditional PCR suffered from a number of analytical limitations. These limitations included the need for large sample sizes and obtaining only a single measurement from the sample that would indicate whether a target was present or not. Additionally, traditional forms of PCR were only semi-quantitative and required additional samples ("standards") to be analyzed each time a set of PCR reactions were performed in order to quantify the starting amount of the target molecule.

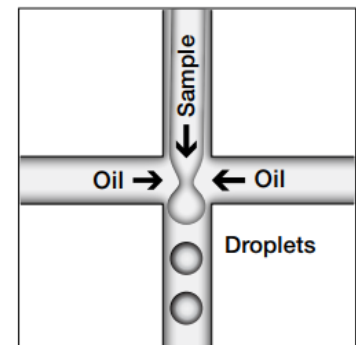
18. Subsequently, new approaches to PCR were developed including "digital PCR." Digital PCR is a technique that allows absolute quantification of the target sequences present in the original sample. Early forms of digital PCR required the user to separate the starting sample into multiple wells through a series of serial dilutions performed by repeatedly pipetting the sample to achieve very dilute samples that contained either a single molecule or no molecule. When this level of dilution was achieved, PCR was performed on the diluted samples. The resulting amplification products and "empty" wells are then evaluated using statistics to quantify the nucleic acid concentrations of the target. Because digital PCR is an absolute measurement, no standards are needed to quantify starting amounts.

19. While an advancement over prior PCR methods, first generation digital PCR still suffered from a number of disadvantages. Performing serial dilutions is very laborious and raises the possibility of errors because of the need for multiple rounds of pipetting that are necessary to carry out the serial dilutions. Additionally, the sensitivity of the method was limited by the number of wells practically available – *i.e.* the number of wells available on a tray. Consequently, a better method was needed in the industry to perform digital PCR.

20. Recognizing the need and the limitations with PCR as it existed, Bio-Rad embarked on a program to improve traditional digital PCR. The centerpiece of the solution and advancement of digital PCR was partitioning the samples by placing them in individual microdroplets that were formed based on emulsion chemistry. The microfluidic process of forming these droplets took the place of the prior serial dilutions. One was now able to create a large numbers of partitions, each one for carrying out a reaction, with a minimum amount of sample handling.

21. Bio-Rad began offering its Droplet Digital™ PCR (ddPCR™) Systems brands in 2011 following it's acquisition of QuantaLife, Inc. ("QuantaLife") and its digital droplet PCR technology ("ddPCR™"). The work at QuantaLife and subsequently at Bio-Rad led to a large number of patents being granted throughout the world concerning droplet based emulsion systems and methods, including the Asserted Patents.

22. Bio-Rad's ddPCR™ Systems enable precise, highly sensitive quantification of nucleic acids. In essence, the technology and many of the patents are directed to the critical steps of forming the droplets, which are a result of advances in both microfluidics and surfactant chemistry. As shown in the image here, in the patented technology, the sample is partitioned into miniaturized droplets that are formed as water-in-oil emulsions (*e.g.*, microdroplets of water surrounded by oil) by passing samples and oil through micro-channels in a micro-fluidic chip and collecting the droplets in a collection well.



23. Bio-Rad's ddPCR™ System is capable of partitioning a single sample into approximately 20,000 microdroplets. The ddPCR™ System and inventions solved scalability and

1 precision issues with existing digital PCR methods that relied on test tubes or wells to hold the
2 samples. Moreover, the ddPCR™ System allows for absolute quantification of DNA and RNA
3 molecules without the use of a standard curve. It is capable of detecting very low concentrations
4 of mutations relative to the background of wild-type DNA in a given sample. For example, Bio-
5 Rad's QX200 System, which operates pursuant to the claims of the asserted patents, currently can
6 scale to quantify target concentrations of a mutation in as low as one out of 1,000,000 (0.0001%)
7 total copies in a given sample.

8 24. Another important feature of Bio-Rad's ddPCR system is that it allows for
9 improved workflow and allows PCR reactions to be carried out with standard equipment such as
10 existing thermal cyclers.

11 25. Bio-Rad recognized that its method for forming multiple partitions of a sample, *e.g.*
12 generating droplets by using a microfluidic chip and particular surfactant chemistry, would not be
13 limited to performing droplet digital PCR but could also be applied to other applications. Such
14 applications include Next Generation Sequencing ("NGS") and single cell analysis. These
15 applications, as envisioned in at least one of Bio-Rad's patents, starts with the patented preparatory
16 steps of creating a first set of partitions containing adaptors that are uniquely barcoded and a
17 second set of partitions comprising the sample to be studied. The barcoded adaptor partitions are
18 then merged with the sample partitions eventually resulting in the barcoded adaptors being
19 attached to the sample partitions. With these preparatory steps performed one can then use other
20 reagents and tools to perform sequencing, determine copy number or perform other modes of
21 analysis. This patented preparatory method allows more individual cells to be analyzed in a
22 highly scalable fashion than was previously possible.

23 26. After Bio-Rad spent years and hundreds of millions of dollars researching and
24 developing its droplet partitioning technology that is the foundation for ddPCR™ and has played a
25 crucial role in expanding the use and accessibility of Next Generation Sequencing and Single Cell
26 Analysis, several of its employees left to found 10X Technologies, Inc., which later became
27 Defendant 10X Genomics. This company, like QuantaLife and Bio-Rad, focused on developing
28 systems and methods for generating droplet based emulsions.

27. In 2015, 10X launched a droplet based emulsion system called GemCode that used the claimed microchips and chemistry for forming droplets that can be used in among other things, Next Generation Sequencing and Single Cell Analysis.

28. Approximately one year later, 10X launched an updated version of its droplet based emulsion system called Chromium™.

29. On information and belief, the GemCode and Chromium™ products both utilized the same scientific principles to create emulsions in a microfluidics chip, and use the same type of microfluidic chips, both of which infringe the claims of the asserted patents.

FIRST CAUSE OF ACTION

Infringement of U.S. Patent No. 9,089,844

30. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.

31. Defendant has infringed, and continues to infringe, literally and/or through the doctrine of equivalents, one or more claims of the '844 patent, including but not limited to claim 15, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within the United States, without authority, certain emulsions formation products, including without limitation, the Chromium™ and GemCode products ("Accused Emulsion Products")¹.

32. For example, the Accused Emulsion Products contain each element of and infringe claim 15, which states:

Claim 15. A method of emulsion formation performed with the system of claim 1, the method comprising:

¹ The evidence provided herein is preliminary and based on Plaintiffs' pre-suit investigation. As of the filing of this complaint, Defendant is making, using, selling, offering to sell, and/or importing within the United States at least four types of Chromium™ products including the Single Cell 3' Solution, Single Cell V(D)J Solution, Genome Solution, Exome Solution, and a *De Novo* Assembly Solution. (10x Genomics Product Website, <https://www.10xgenomics.com/products/> (last accessed July 31, 2017)). These reagent products are used in conjunction with the Chromium Controller instrument which accepts the microfluidic chip that is used to partition samples and create droplets. The Chromium product line is a continuation of the prior GemCode product line, which also infringes for the same reasons identified for the Chromium. Plaintiffs have cited publically available documents that are representative of the features available on each version of the Accused Emulsion Products.

1 applying pressure with the fluidics assembly to the emulsion formation units, to
2 drive droplet formation at the channel intersections and collection of emulsions of
the droplets in the droplet wells;

3 monitoring the pressure with the pressure sensor; and

4 stopping application of the pressure when the change in pressure is detected.

5 **Claim 1.** A system for emulsion formation, comprising:

6 a microfluidic device having a plurality of emulsion formation units each
7 including a sample well, a droplet well, a sample inlet channel extending from the
sample well to a channel intersection, and a droplet outlet channel extending from
8 the channel intersection to the droplet well; and

9 an instrument that operatively receives the microfluidic device and including a
fluidics assembly having a pressure sensor, the instrument being configured (a) to
10 apply pressure to the emulsion formation units in parallel with the fluidics
assembly to drive parallel generation of droplets at the channel intersections of the
emulsion formation units and parallel collection of emulsions of the droplets in
11 the droplet wells of the emulsion formation units, (b) to monitor the pressure with
the pressure sensor, and (c) to stop application of the pressure to all of the
12 emulsion formation units when the pressure sensor detects a change in pressure
indicative of air entering any one of the sample inlet channels from a
13 corresponding sample well.

14 Defendant infringes each element of claim 15 of the '844 patent for the following reasons:

15 33. The Accused Emulsion Products are droplet based emulsion systems that use a
16 method of forming thousands of emulsions in parallel. On information and belief, these emulsions
17 are formed by combining a sample and reagents with a gel bead, encapsulating them in a water-in-
18 oil emulsion, and collecting those emulsions in outlet wells.

19 34. On information and belief, the Accused Emulsion Products use a method that
20 include a microfluidics chip containing a plurality of emulsion formation units wherein each unit
21 has a set of inlet wells that are configured to hold either the oil phase (*i.e.* continuous phase), the
22 sample (*i.e.* dispersed phase) or reagents (*e.g.* gel beads), and an outlet well to collect the
23 emulsions.

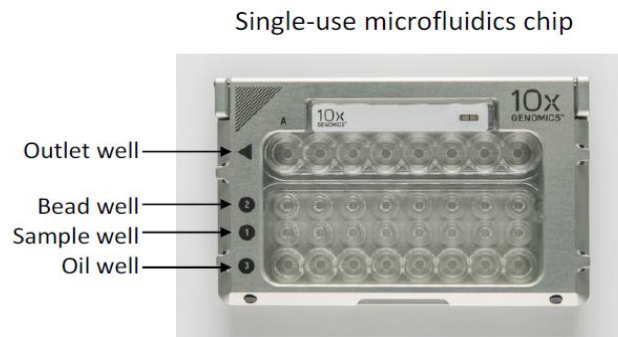


Exhibit H, Black Sales Presentation, p. 32.

35. On information and belief, the Accused Emulsion Products use a method that includes emulsion formation units wherein each unit has a sample inlet channel extending from the sample well to a channel junction (red square below), and a droplet outlet channel extending from the channel junction to an outlet well for collecting the emulsions.

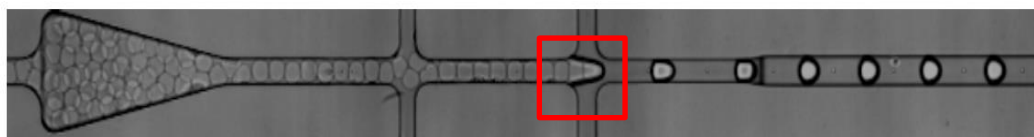
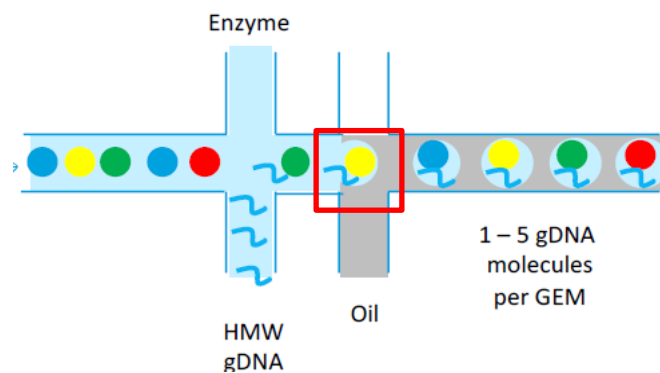


Exhibit H, Black Sales Presentation, p. 7.

36. On information and belief, the Accused Emulsion Products use a method that includes an instrument, such as the Chromium™ Controller, to hold the microfluidic chips where the chip has a gasket covering the wells.

37. On information and belief, that instrument has a fluidics assembly that applies a pressure/vacuum to the emulsion formation units in parallel to drive generation of droplets in the channel junctions of the microfluidics chip, wherein the instrument monitors the pressure applied to the emulsion formation units using a pressure sensor, which can stop application of the pressure

1 if it senses a change indicative of air entering the sample channels. *See* Exhibit I, Chromium User
2 Guide (Single Cell 3') at p. 56 (stating that one of the errors encountered that will stop the machine
3 is when the fluids are loaded incorrectly is "Pressure not at Setpoint"). Without fluid in the sample
4 well, air will enter the corresponding channel.

5 38. On information and belief, Defendant began selling the Chromium™ Product in the
6 United States since at least February 2016 and the GemCode Product since at least February 2015.

7 39. On information and belief, Defendant commercially manufactures, uses, offers for
8 sale, or sells within the United States, or imports into the United States the Chromium™ and
9 GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™
10 and GemCode Products infringes Claim 15 of the '844 Patent under 35 U.S.C. § 271(a).

11 40. On information and belief Defendant has been aware of the existence of the '844
12 patent since at least July 2015 as numerous founders of its company participated in the filing of
13 the patent application leading to the '844 patent at least while they were employees at Bio-Rad.
14 As described below, Defendant has been aware that its actions in testing and developing products
15 and supplying products to others infringes the claims of the '844 patent.

16 41. On information and belief, Defendant is aware that the Accused Emulsion
17 Products, in their normal mode of operation for generating droplet based emulsions in a
18 microfluidic chip, practices the method claimed in at least Claim 15 of the '844 patent. By
19 providing end users with the Accused Emulsion Products and instructions to use the products in an
20 intended manner, which Defendant knows infringes the method claimed in at least Claim 15 of the
21 '844 patent, Defendant has induced infringement under 35 U.S.C. § 271(b).

22 42. On information and belief, Defendant has supplied the Accused Emulsion Products
23 to end users to generate droplet based emulsions using a microfluidics chip, knowing that such
24 products are specifically adapted to practice the methods of the invention, are not a staple article
25 of commerce and knowing that when used in their intended manner do not have substantial uses,
26 which do not practice the method claimed in claim 15 of the '844 Patent. As set forth in the
27 paragraphs above, the Accused Emulsion Products supplied by Defendant are specifically
28 designed to be used to generate droplet based emulsions. Defendant's act of supplying a material

1 and substantial component of claim 15 of the '844 Patent, which is not a staple and for which there
 2 are not substantial non-infringing uses, constitutes contributory infringement under 35 U.S.C. §
 3 271(c).

4 43. Defendant's infringement of the '844 patent has been willful and deliberate because
 5 Defendant's knew or should have known about the '844 patent and their infringement of that patent
 6 but acted despite an objectively high likelihood that such acts would infringe the patent. On
 7 information and belief, at least three of the individuals who developed the Accused Emulsion
 8 Products are named inventors of the '844 patent who – while Bio-Rad employees, and on behalf of
 9 Bio-Rad, which owns the '844 patent – were involved in the conception and/or reduction to
 10 practice of the '844 patent and have had knowledge of the patent since it issued in July 2015.

11 44. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered
 12 and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm,
 13 irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs'
 14 remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and
 15 permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue
 16 suffering irreparable harm absent injunctive relief.

17 **SECOND CAUSE OF ACTION**

18 **Infringement of Patent No. 9,126,160**

19 45. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.

20 46. Defendant has infringed, and continues to infringe, literally and/or through the
 21 doctrine of equivalents, one or more claims of the '160 patent, including but not limited to claim 1,
 22 pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within
 23 the United States, without authority, certain emulsions formation products, including without
 24 limitation, the Accused Emulsion Products.

25 47. For example, the Accused Emulsion Products contain each element of and infringe
 26 at least claim 1, which states:

27 **Claim 1.** A system for forming an array of emulsions in parallel, comprising:
 28

a plate providing an array of emulsion production units each configured to produce a separate emulsion and each including a set of wells interconnected by a set of channels forming a channel junction, each channel being bounded circumferentially, each set of wells including at least one first input well to receive a continuous phase, a second input well to receive a dispersed phase, and an output well;

wherein the set of channels includes at least two input channels extending separately from the input wells to the channel junction, at which droplets of the dispersed phase are generated in the continuous phase, and an output channel extending from the channel junction to the output well, in which an emulsion is collected.

Defendant infringes each element of claim 1 of the '160 patent for the following reasons:

48. The Accused Emulsion Products are droplet based emulsion systems that form thousands of emulsions in parallel. On information and belief, these emulsions are formed by combining a sample and reagents with a gel bead, encapsulating them in a water-in-oil emulsion, and collecting those emulsions in outlet wells.

49. On information and belief, the Accused Emulsion Products include a microfluidics chip (*i.e.* plate) containing a plurality of emulsion formation units each configured to produce a separate emulsion.

50. On information and belief, each emulsion formation unit in the Accused Emulsion Products has a set of wells including an inlet well for the oil phase (*i.e.* continuous phase), an inlet well for the sample (*i.e.* dispersed phase), an inlet well for reagents (*e.g.* gel beads), and an outlet well to collect the emulsions.

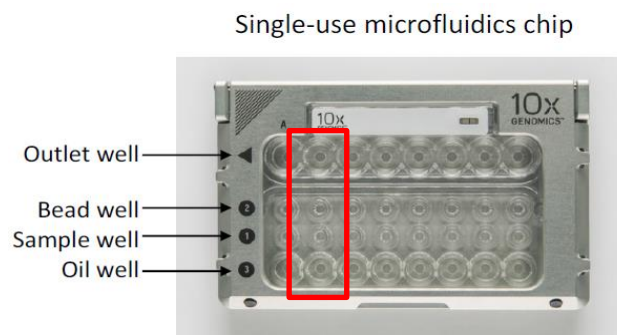
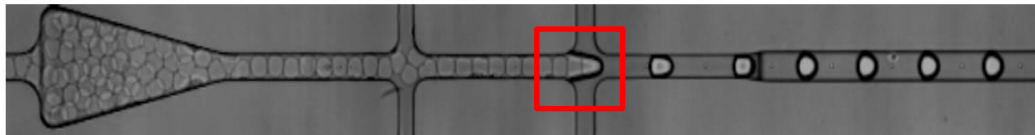
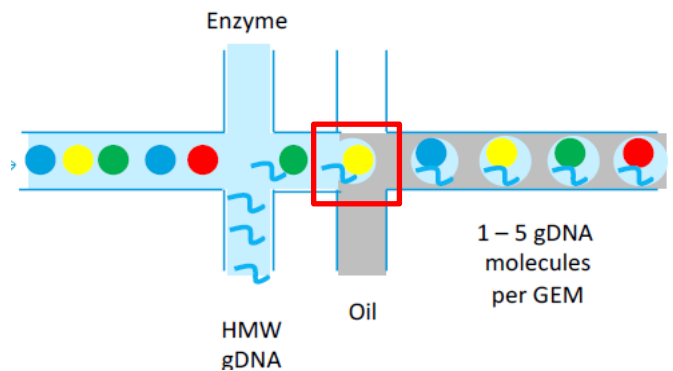


Exhibit H, Black Sales Presentation, p. 32.

51. On information and belief, the set of wells in each emulsion formation unit is interconnected by channels to form a channel junction. As shown below, the sample inlet channel

1 extends from the sample well to a channel junction (red square below), and a droplet outlet
2 channel extends from the channel junction to an outlet well for collecting the emulsions.



12 Exhibit H, Black Sales Presentation, p. 7.

13 52. On information and belief, the channels in the Accused Emulsion Products are
14 located within the microfluidics chip and are bound circumferentially.

15 53. On information and belief, the microfluidics chip contains eight emulsion
16 production units wherein each unit has at least one input channel extending from the oil well to a
17 channel junction and a second input channel extending from the sample well to the channel
18 junction. On information and belief, the droplets containing the sample in the oil phase (*i.e.*
19 water-in-oil emulsion or dispersed phase in the continuous phase) are generated at the channel
20 junction. On information and belief, these emulsions proceed from the channel junction down an
21 output channel to an output well where the emulsions are collected.

22 54. On information and belief, Defendant began selling the Chromium™ Product in the
23 United States since at least February 2016 and the GemCode Product since at least February 2015.

24 55. On information and belief, Defendant commercially manufactures, uses, offers for
25 sale, or sells within the United States, or imports into the United States the Chromium™ and
26 GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™
27 and GemCode Products infringes at least Claim 1 of the '160 Patent under 35 U.S.C. § 271(a).
28

1 56. On information and belief Defendant has been aware of the existence of the '160
2 patent since at least September 2015 as numerous founders of its company participated in the
3 filing of the patent application leading to the '160 patent at least while they were employees at
4 QuantaLife or Bio-Rad. As described below, Defendant has been aware that its actions in testing
5 and developing products and supplying products to others infringes the claims of the '160 patent.

6 57. On information and belief, Defendant is aware that the Accused Emulsion
7 Products, in their normal mode of operation for generating droplet based emulsions in a
8 microfluidic chip, practice each of the elements of Claim 1 of the '160 patent. By providing end
9 users with the Accused Emulsion Products and instructions to use the products in an intended
10 manner, which Defendant knows infringes at least Claim 1 of the '160 patent, Defendant has
11 induced infringement under 35 U.S.C. § 271(b).

12 58. On information and belief, Defendant has supplied the Accused Emulsion Products
13 to end users to generate droplet based emulsions, knowing that such products are not a staple
14 article of commerce and knowing that when used in their intended manner do not have substantial
15 uses which do not practice claim 1 of the '160 Patent. As set forth in the paragraphs above, the
16 Accused Emulsion Products supplied by Defendant are specifically designed to generate droplet
17 based emulsions. Defendant's act of supplying a material and substantial component of claim 1 of
18 the '160 Patent, which is not a staple and for which there are not substantial non-infringing uses,
19 constitutes contributory infringement under 35 U.S.C. § 271(c).

20 59. Defendant's infringement of the '160 patent has been willful and deliberate because
21 Defendant's knew or should have known about the '160 patent and their infringement of that patent
22 but acted despite an objectively high likelihood that such acts would infringe the patent. On
23 information and belief, at least three of the individuals who developed the Accused Emulsion
24 Products are the named inventors of the '160 patent who – while Bio-Rad employees, and on
25 behalf of Bio-Rad, which owns the '160 patent – were involved in the conception and/or reduction
26 to practice of the '160 patent and had knowledge of the patent since it issued in September 2015.

27
28

60. The marking requirements of 35 U.S.C. § 287 have been satisfied through, including but not limited to, Defendant's actual knowledge of the '160 patent and its infringement thereof.

61. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm, irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs' remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue suffering irreparable harm absent injunctive relief.

THIRD CAUSE OF ACTION

Infringement of Patent No. 9,216,392

62. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.

63. Defendant has infringed, and continues to infringe, literally and/or through the doctrine of equivalents, one or more claims of the '392 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within the United States, without authority, certain emulsions formation products, including without limitation, the Accused Emulsion Products.

64. For example, the Accused Emulsion Products contain each element of and infringe at least claim 1, which states:

Claim 1. A system for forming an array of emulsions, comprising:

a plate including an array of emulsion production units, each unit including

at least one first input well to hold a continuous phase for an emulsion,

a second input well to hold a dispersed phase for an emulsion, and

an output well connected to the first and second input wells by a set of channels that form a channel junction, the set of channels including at least two input channels extending separately from the input wells to the channel junction and an output channel extending from the channel junction to the output well, each channel of the set of channels being circumferentially bounded; and

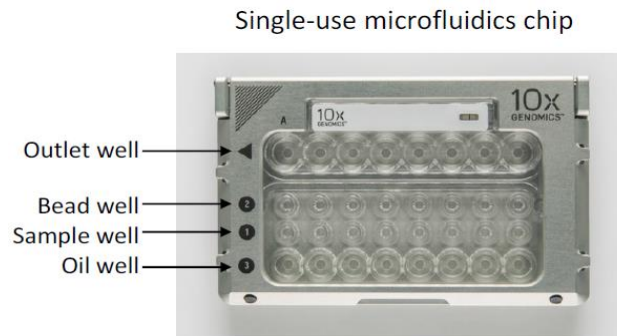
a vacuum or pressure source configured to be connected operatively to wells of the plate to form a pressure drop between the input wells and the output well of each unit to drive the continuous phase and the dispersed phase from the first and

1 second input wells of the unit to the channel junction, at which droplets of the
2 dispersed phase are generated, and through the output channel for collection in the
output well of the unit.

3 Defendant infringes each element of claim 1 of the '392 patent for the following reasons:

4 65. The Accused Emulsion Products are droplet based emulsion systems that form
5 thousands of emulsions in parallel. On information and belief, these emulsions are formed by
6 combining a sample and reagents with a gel bead, encapsulating them in a water-in-oil emulsion,
7 and collecting those emulsions in outlet wells.

8 66. On information and belief, the Accused Emulsion Products include a microfluidics
9 chip containing a plurality of emulsion formation units wherein each unit has a set of inlet wells
10 that are configured to hold either the oil phase (*i.e.* continuous phase), the sample, (*i.e.* dispersed
11 phase) or reagents (*e.g.* gel beads), and an outlet well to collect the emulsions.



18 Exhibit H, Black Sales Presentation, p. 32.

19 67. On information and belief, the microfluidics chip contains eight emulsion
20 production units wherein each unit has separate channels extending from the oil well and sample
21 well (*i.e.* input wells) to a channel junction. On information and belief, the droplets containing the
22 sample in the oil phase (*i.e.* water-in-oil emulsion or dispersed phase in the continuous phase) are
23 generated at the channel junction and proceed from the channel junction down an outlet channel to
24 an outlet well where the emulsions are collected. As shown below, the sample inlet channel
25 extends from the sample well to a channel junction (red square below), and a droplet outlet
26 channel extends from the channel junction to an outlet well for collecting the emulsions.

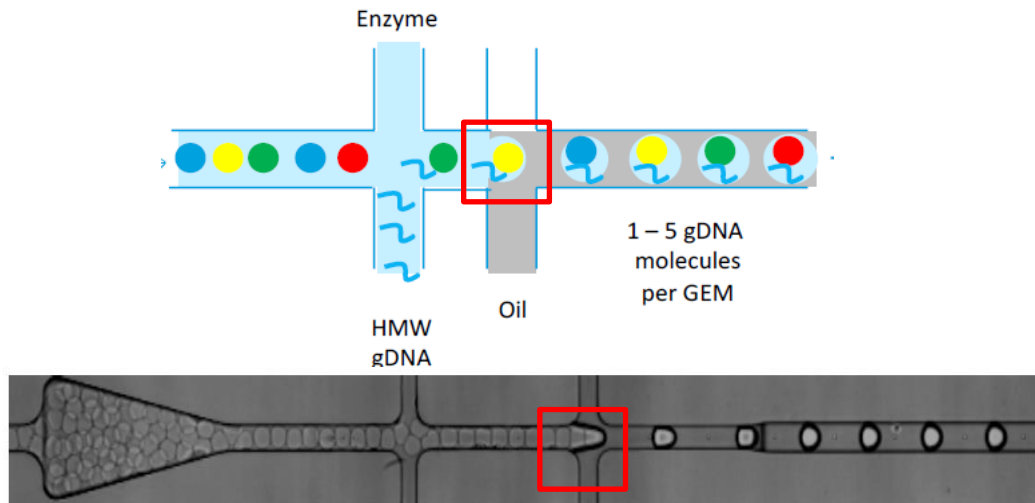


Exhibit H, Black Sales Presentation, p. 7.

68. On information and belief, the channels in the Accused Emulsion Products are located within the microfluidics chip and are bound circumferentially.

69. On information and belief, the Accused Emulsion Products include a vacuum or pressure source that applies vacuum or pressure to the emulsion formation units and forms a pressure drop between the input wells and the outlet well for each unit. On information and belief, this pressure drop drives the continuous phase and dispersed phase from the input wells to the channel junction wherein the emulsions are created and then are collected in an outlet well. On information and belief, in the event the pressure cannot form a pressure drop between the input wells and output wells, the instrument triggers a pressure alarm. *See* Exhibit I, Chromium User Guide (Single Cell 3') at p. 56 (stating that one of the errors encountered when the fluids are loaded incorrectly is "Pressure not at Setpoint").

70. On information and belief, Defendant began selling the Chromium™ Product in the United States since at least February 2016 and the GemCode Product since at least February 2015.

71. On information and belief, Defendant commercially manufactures, uses, offers for sale, or sells within the United States, or imports into the United States the Chromium™ and GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™ and GemCode Products infringes at least Claim 1 of the '392 Patent under 35 U.S.C. § 271(a).

1 72. On information and belief Defendant has been aware of the existence of the '392
2 patent since at least December 2015 as numerous founders of its company participated in the filing
3 of the patent application leading to the '392 patent at least while they were employees at QuantLife
4 or Bio-Rad. As described below, Defendant has been aware that its actions in testing and
5 developing products and supplying products to others infringes the claims of the '392 patent.

6 73. On information and belief, Defendant is aware that the Accused Emulsion
7 Products, in their normal mode of operation for generating droplet based emulsions in a
8 microfluidic chip, practices each of the elements of Claim 1 of the '392 patent. By providing end
9 users with the Accused Emulsion Products and instructions to use the products in an intended
10 manner, which Defendant knows infringes at least Claim 1 of the '392 patent, Defendant has
11 induced infringement under 35 U.S.C. § 271(b).

12 74. On information and belief, Defendant has supplied the Accused Emulsion Products
13 to end users to generate droplet based emulsions, knowing that such products are not a staple
14 article of commerce and knowing that when used in their intended manner do not have substantial
15 uses which do not practice claim 1 of the '392 Patent. As set forth in the paragraphs above, the
16 Accused Emulsion Products supplied by Defendant are specifically designed to generate droplet
17 based emulsions. Defendant's act of supplying a material and substantial component of claim 1 of
18 the '392 Patent, which is not a staple and for which there are not substantial non-infringing uses,
19 constitutes contributory infringement under 35 U.S.C. § 271(c).

20 75. Defendant's infringement of the '392 patent has been willful and deliberate because
21 Defendant's knew or should have known about the '392 patent and their infringement of that patent
22 but acted despite an objectively high likelihood that such acts would infringe the patent. On
23 information and belief, at least three of the individuals who developed the Accused Emulsion
24 Products is the named inventor of the '392 patent who – while Bio-Rad employees, and on behalf
25 of Bio-Rad, which owns the '392 patent – were involved in the conception and/or reduction to
26 practice of the '392 patent and had knowledge of the patent since it issued in December 2015.

27
28

1 76. The marking requirements of 35 U.S.C. § 287 have been satisfied through,
2 including but not limited to, Defendant's actual knowledge of the '392 patent and infringement
3 thereof.

4 77. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered
5 and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm,
6 irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs'
7 remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and
8 permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue
9 suffering irreparable harm absent injunctive relief.

10 **FOURTH CAUSE OF ACTION**

11 **Infringement of Patent No. 9,347,059**

12 78. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.

13 79. Defendant has infringed, and continues to infringe, literally and/or through the
14 doctrine of equivalents, one or more claims of the '059 patent, including but not limited to claim 1,
15 pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within
16 the United States, without authority, certain emulsions formation products, including without
17 limitation, the Accused Emulsion Products.

18 80. For example, the Accused Emulsion Products contain each element of and infringe
19 at least claim 1, which states:

20 **Claim 1.** A method comprising:

21 a. generating a plurality of first partitions comprising adaptors, wherein each of
22 the first partitions has on average a first volume and wherein the adaptors
23 comprise unique barcodes, wherein the first partitions are first droplets in a fluid
24 that is immiscible to the first droplets;

25 b. generating a plurality of second partitions comprising sample polynucleotides,
26 wherein each of the second partitions has on average a second volume, wherein
27 the second volume is greater than the first volume, wherein the second partitions
28 are second droplets in a immiscible fluid that is immiscible to the second droplets;

 c. applying a treatment to fuse the at least one second partition with at least one
first droplet to form a fused partition; and

d. tagging one of the sample polynucleotides, or fragment thereof, with at least one of the adaptors in the fused partition to form tagged polynucleotides or fragments thereof.

Defendant infringes each element of claim 1 of the '059 patent for the following reasons:

81. The Accused Emulsion Products when tested and when used by customers are droplet based emulsion systems that use a method of forming thousands of emulsions in parallel. On information and belief, in normal operation, these emulsions are formed by combining a sample and reagents with a gel bead, encapsulating them in an oil emersion, and collecting those emulsions in outlet wells.

82. On information and belief, the Accused Emulsion Products, in normal operation, such as when they are tested, use a method that has a first set of partitions containing gel beads with unique adaptors and bar codes that are first droplets in a background fluid that does not mix with the gel beads.

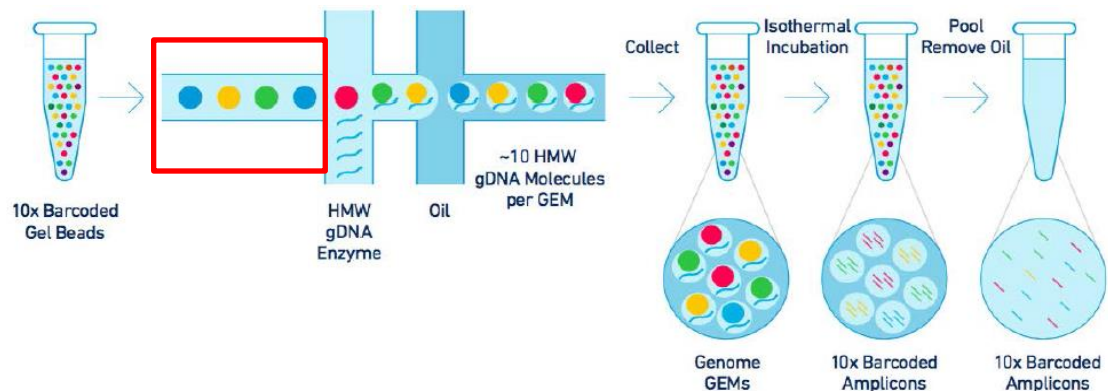
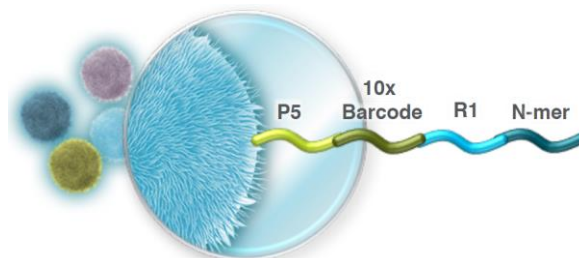


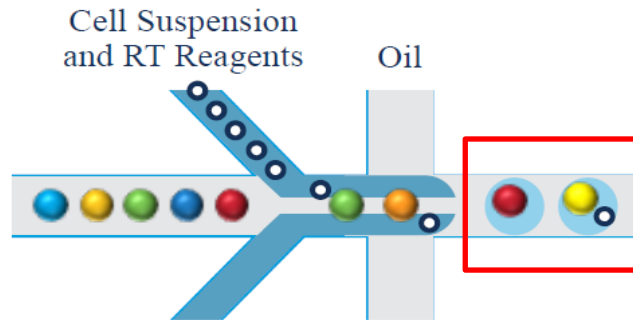
Exhibit J, Chromium Genome Reagents Kits User Guide at p. 2.

83. On information and belief, the "gel beads" used in the method contain numerous copies of single oligo sequences extending from the surface with a "P5 adaptor" and "10x barcode."

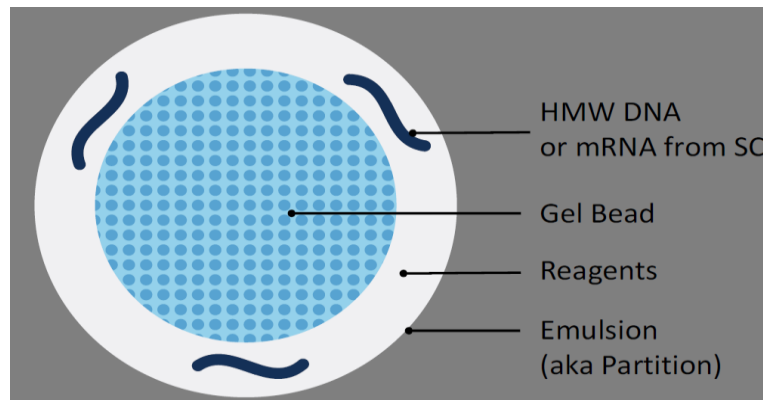


1 Exhibit H, Black Sales Presentation, p. 6.

2 84. On information and belief, the Accused Emulsion Products use a method that
3 generates a second set of partitions comprising the sample polypeptides encapsulated in an oil
4 phase (*i.e.* emulsions), and each of these emulsions are in an immiscible background fluid.



11 Exhibit H, Black Sales Presentation, p. 31.



19 Exhibit H, Black Sales Presentation, p. 5.

20 85. On information and belief, the Accused Emulsion Products use a method wherein
21 the gel bead (first partition) is brought into contact with the emulsion (second partition) and the
22 adaptor sequences from the dissolved gel bead binds to copies of DNA from the sample during the
23 incubation and copying process. On information and belief, the result of this method is a fused
24 product that includes an adapter sequence with a unique barcode and copy of the DNA from the
25 sample.

26

27

28

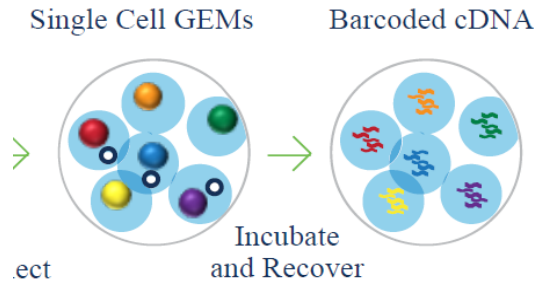


Exhibit H, Black Sales Presentation, p. 31; *see also* Exhibit I, Chromium User Guide (Single Cell 3') p 2. ("Upon dissolution of the Single Cell 3' Gel Bead in a GEM, primers containing (i) an Illumina R1 sequence (read 1 sequencing primer), (ii) a 16 bp 10x Barcode, (iii) a 10 bp Unique Molecular Identifier (UMI) and (iv) a poly-dT primer sequence are released and mixed with cell lysate and Master Mix. ***Incubation of the GEMs then produces barcoded, full-length cDNA from poly-adenylated mRNA.***") (emphasis added).

86. On information and belief, Defendant began selling the Chromium™ Product in the United States since at least February 2016 and the GemCode Product since at least February 2015.

87. On information and belief, Defendant commercially manufactures, uses, offers for sale, or sells within the United States, or imports into the United States the Chromium™ and GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™ and GemCode Products practices the methods identified above and infringes at least Claim 1 of the '059 Patent under 35 U.S.C. § 271(a).

88. On information and belief Defendant has been aware of the existence of the '059 patent since at least May 2016 as numerous founders of its company participated in the filing of the patent application leading to the '059 patent at least while they were employees at Bio-Rad. As described below, Defendant has been aware that its actions in testing and developing products and supplying products to others infringes the claims of the '059 patent

89. On information and belief, Defendant is aware that the Accused Emulsion Products, in their normal mode of operation for generating droplet based emulsions in a microfluidic chip, practices the method claimed in at least Claim 1 of the '059 patent. By providing end users with the Accused Emulsion Products such as gel beads with bar codes, microfluidic chips for forming partitions such as droplets, a droplet generator for creating droplets

1 in conjunction with the microfluidic chip and instructions to operate the product in an intended
2 manner, which Defendant knows infringes the method claimed in at least Claim 1 of the '059
3 patent, Defendant has induced infringement under 35 U.S.C. § 271(b).

4 90. On information and belief, Defendant has supplied the Accused Emulsion Products
5 to end users to generate droplet based emulsions using a microfluidics chip, knowing that such
6 products are specifically adapted to practice the methods of the invention, are not a staple article
7 of commerce and knowing that when used in their intended manner do not have substantial uses
8 which do not practice the method claimed in claim 1 of the '059 Patent. As set forth in the
9 paragraphs above, the Accused Emulsion Products supplied by Defendant are specifically
10 designed to be used to generate droplet based emulsions. Defendant's act of supplying a material
11 and substantial component of claim 1 of the '059 Patent, which is not a staple and for which there
12 are not substantial non-infringing uses, constitutes contributory infringement under 35 U.S.C. §
13 271(c).

14 91. To the extent Defendant argues that it performs the step of generating a plurality of
15 first partitions by creating gel beads with adaptors and barcodes while its customers perform the
16 remaining steps of claim 1, Defendant is still liable for infringement under a joint infringement
17 theory. Defendant provides all the necessary components to its customers to perform the steps of
18 the claimed method. It provides directions to use those components in a way that when so used
19 practices the steps of the method other than what Defendant may claim to have practiced. The
20 guidance in using the materials Defendant provides its customers evidences sufficient direction
21 over its customers use of its products to constitute joint infringement.

22 92. Defendant's infringement of the '059 patent has been willful and deliberate because
23 Defendant's knew or should have known about the '059 patent and their infringement of that patent
24 but acted despite an objectively high likelihood that such acts would infringe the patent. On
25 information and belief, at least one of the individuals who developed the Accused Emulsion
26 Products is the named inventor of the '059 patent who – while a Bio-Rad employee, and on behalf
27 of Bio-Rad, which owns the '059 patent – was involved in the conception and/or reduction to
28 practice of the '059 patent and had knowledge of the patent since it issued in May 2016.

93. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm, irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs' remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue suffering irreparable harm absent injunctive relief.

FIFTH CAUSE OF ACTION

Infringement of Patent No. 9,500,664

94. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.

95. Defendant has infringed, and continues to infringe, literally and/or through the doctrine of equivalents, one or more claims of the '664 patent, including but not limited to claim 8, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within the United States, without authority, certain emulsions formation products, including without limitation, the Accused Emulsion Products.

96. For example, the Accused Emulsion Products contain each element of and infringe at least claim 8, which states:

Claim 8. A method of generating sample-containing droplets suspended in a background fluid, comprising:

transporting sample-containing fluid into a sample well;

transporting background fluid into a background fluid well;

transporting sample-containing fluid through a first channel, from the sample well to a droplet generation region;

transporting background fluid through a second channel, from the background fluid well to the droplet generation region;

generating sample-containing droplets suspended in the background fluid at the droplet generation region; and

transporting the sample-containing droplets through a third channel, from the droplet generation region to a droplet well;

wherein an upper region of each of the sample well, the background fluid well, and the droplet well protrudes from the top surface;

1 wherein the first channel, the second channel, the third channel, and the droplet
2 generation region are formed in a bottom surface of the substrate; and

3 wherein the substrate and the upper region of each well are injection molded as a
4 single piece.

5 Defendant infringes each element of claim 8 of the '664 patent for the following reasons:

6 97. The Accused Emulsion Products are droplet based emulsion systems that use a
7 method of forming thousands of emulsions in parallel. On information and belief, these emulsions
8 are formed by combining a sample and reagents with a gel bead, encapsulating them in a water-in-
9 oil emulsion, and collecting those emulsions in outlet wells.

10 98. On information and belief, the Accused Emulsion Products use a method that uses
11 a microfluidics chip having a bottom surface and a top surface, and each of the wells in the
12 microfluidics chip has an upper region that protrudes through the top surface of the chip.



13 Exhibit I, Chromium User Guide (Single Cell 3') at p. 55.

14 99. On information and belief, the Accused Emulsion Products use a method having a
15 set of wells containing either the sample, oil, or other reagents (*e.g.* gel beads), which are
16 fluidically interconnected by channels in the bottom surface of the chip to form a channel junction
17 (red square) wherein the oil phase encompasses the sample and gel bead to generate emulsions.
18 On information and belief, the channel junction or "droplet generation region" is the intersection
19 of the oil phase (background fluid) channel, sample containing fluid channel, and outlet channel
20 with the sample-containing emulsions (droplets).
21
22
23
24
25
26
27
28

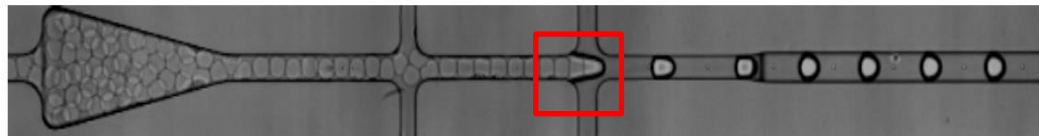
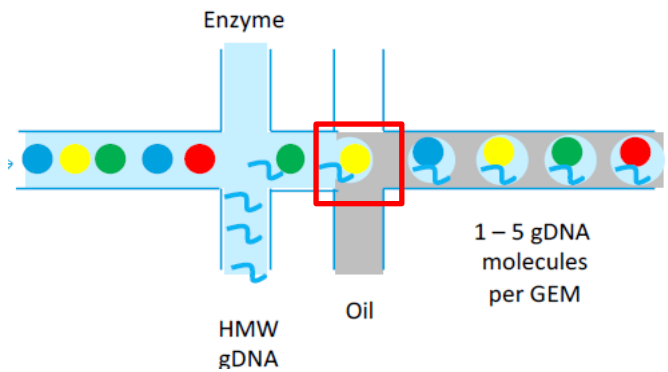


Exhibit H, Black Sales Presentation, p. 7.

100. On information and belief, the inlet and outlets wells and substrate of the microfluidics chip containing the microfluidic channels are a single injection molded piece.

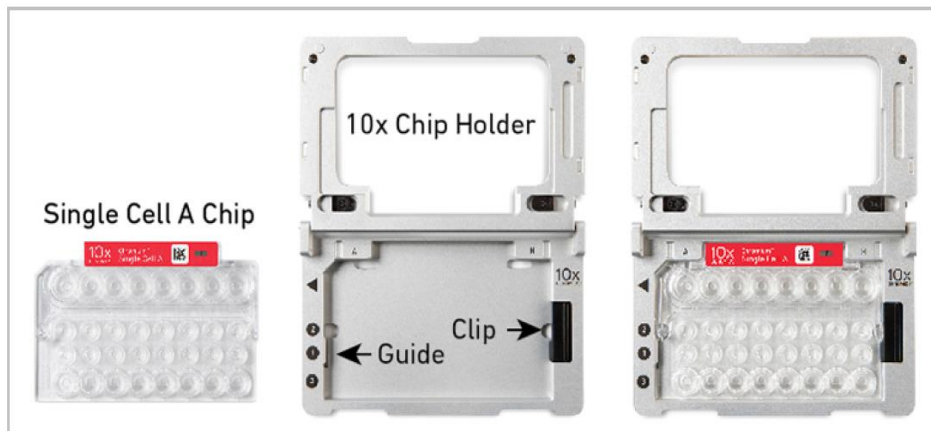


Exhibit I, Chromium User Guide (Single Cell 3') at p. 44.

101. On information and belief, Defendant began selling the Chromium™ Product in the United States since at least February 2016 and the GemCode Product since at least February 2015.

102. On information and belief, Defendant commercially manufactures, uses, offers for sale, or sells within the United States, or imports into the United States the Chromium™ and GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™ and GemCode Products infringes at least Claim 8 of the '664 Patent under 35 U.S.C. § 271(a).

103. On information and belief Defendant has been aware of the existence of the '664 patent since at least November 2016 as numerous founders of its company participated in the

1 filing of the patent application leading to the '664 patent at least while they were employees at
2 Bio-Rad. As described below, Defendant has been aware that its actions in testing and developing
3 products and supplying products to others infringes the claims of the '664 patent.

4 104. On information and belief, Defendant is aware that the Accused Emulsion
5 Products, in their normal mode of operation for generating droplet based emulsions in a
6 microfluidic chip, practices the method claimed in at least Claim 8 of the '664 patent. By
7 providing end users with the Accused Emulsion Products and instructions to use the products in an
8 intended manner, which Defendant knows infringes at least Claim 8 of the '664 patent, Defendant
9 has induced infringement under 35 U.S.C. § 271(b).

10 105. On information and belief, Defendant has supplied the Accused Emulsion Products
11 to end users to generate droplet based emulsions using a microfluidics chip, knowing that such
12 products are specifically adapted to practice the methods of the invention, are not a staple article
13 of commerce and knowing that when used in their intended manner do not have substantial uses
14 which do not practice the method claimed in claim 8 of the '664 Patent. As set forth in the
15 paragraphs above, the Accused Emulsion Products supplied by Defendant are specifically
16 designed to generate droplet based emulsions. Defendant's act of supplying a material and
17 substantial component of claim 8 of the '664 Patent, which is not a staple and for which there are
18 not substantial non-infringing uses, constitutes contributory infringement under 35 U.S.C. §
19 271(c).

20 106. Defendant's infringement of the '664 patent has been willful and deliberate because
21 Defendant's knew or should have known about the '664 patent and their infringement of that patent
22 but acted despite an objectively high likelihood that such acts would infringe the patent. On
23 information and belief, at least two of the individuals who developed the Accused Emulsion
24 Products are named inventors of the '664 patent who – while Bio-Rad employees, and on behalf of
25 Bio-Rad, which owns the '664 patent – were involved in the conception and/or reduction to
26 practice of the '664 patent and had knowledge of the patent since it issued in November 2016.

27 107. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered
28 and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm,

1 irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs'
 2 remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and
 3 permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue
 4 suffering irreparable harm absent injunctive relief.

5 SIXTH CAUSE OF ACTION

6 **Infringement of Patent No. 9,636,682**

7 108. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.

8 109. Defendant has infringed, and continues to infringe, literally and/or through the
 9 doctrine of equivalents, one or more claims of the '682 patent, including but not limited to claim 1,
 10 pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within
 11 the United States, without authority, certain emulsions formation products, including without
 12 limitation, the Accused Emulsion Products.

13 110. For example, the Accused Emulsion Products infringe each element of claim 1,
 14 which states:

15 **Claim 1.** A system for generating droplets, comprising:

16 a device including a sample well configured to receive sample-containing fluid, a
 17 continuous-phase well configured to receive continuous-phase fluid, and a droplet well, the
 18 device also including a channel network having a first channel, a second channel, and a
 19 third channel that meet one another in a droplet-generation region;

20 a holder for the device;

21 and an instrument configured to operatively receive an assembly including the device and
 22 the holder and to drive sample-containing fluid from the sample well to the droplet-
 23 generation region via the first channel, continuous-phase fluid from the continuous-phase
 24 well to the droplet-generation region via the second channel, and sample-containing
 25 droplets from the droplet-generation region to the droplet well via the third channel.

26 Defendant infringes each element of claim 1 of the '682 patent for the following reasons:

27 111. The Accused Emulsion Products are droplet based emulsion systems that form
 28 thousands of emulsions (*i.e.* droplets) in parallel. On information and belief, these emulsions are
 formed by combining a sample and reagents with a gel bead, encapsulating them in a water-in-oil
 emulsion, and collecting those emulsions in outlet wells in a microfluidic chip.

112. On information and belief, the Accused Emulsion Products include a microfluidics chip containing a plurality of emulsion formation units wherein each unit has a set of inlet wells that are configured to hold either the oil phase (*i.e.* continuous phase), the sample, (*i.e.* dispersed phase) or reagents (*e.g.* gel beads), and an outlet well to collect the emulsions.

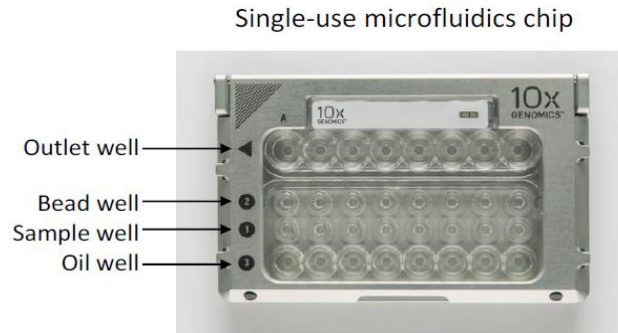


Exhibit H, Black Sales Presentation, p. 32.

113. On information and belief, the Accused Emulsion Products have a set of wells containing either the sample, oil, or other reagents (gel beads), which are fluidically interconnected by channels in the bottom surface of the chip to form a channel junction (red square) wherein the oil phase encompasses the sample and gel bead to generate emulsions. On information and belief, the channel junction or "droplet generation region" is the intersection of the oil phase channel, sample containing fluid channel, and outlet channel with the sample-containing emulsions.

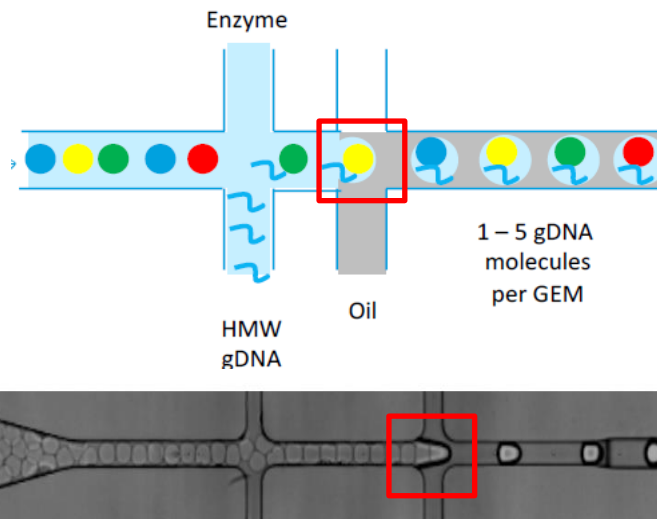


Exhibit H, Black Sales Presentation, p. 7.

114. On information and belief, the Accused Emulsion Products includes a "chip holder" to hold the microfluidic chip.

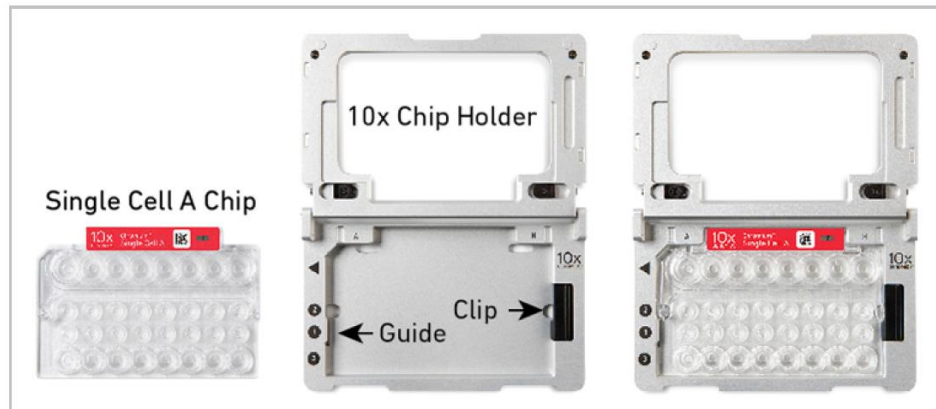


Exhibit I, Chromium User Guide (Single Cell 3') at p. 44.

115. On information and belief, the Accused Emulsion Products use an instrument, such as the Chromium™ Controller, to receive the microfluidic chip and chip holder.



Exhibit I, Chromium User Guide (Single Cell 3') at p. 14.

116. On information and belief, the Accused Emulsion Products use an instrument that is configured to drive sample containing fluid from the sample well and oil from the oil well to the channel junction, where the emulsions are formed, and then drive the emulsions out through the outlet channel to the outlet well for collection.

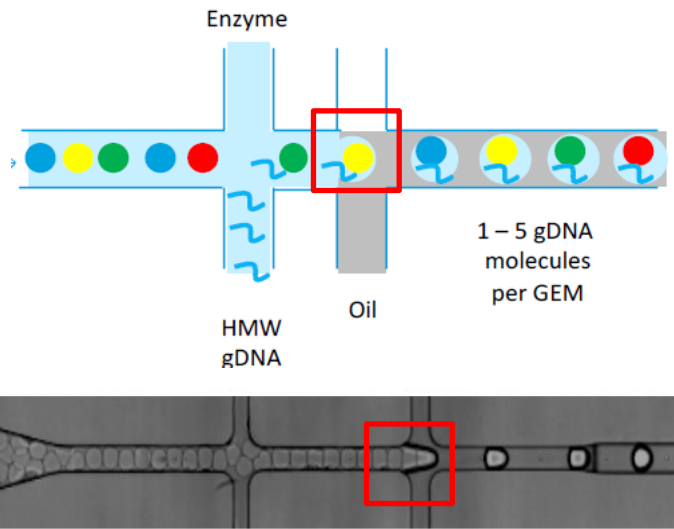


Exhibit H, Black Sales Presentation, p. 7.

117. On information and belief, Defendant began selling the Chromium™ Product in the United States since at least February 2016 and the GemCode Product since at least February 2015.

118. On information and belief, Defendant commercially manufactures, uses, offers for sale, or sells within the United States, or imports into the United States the Chromium™ and GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™ and GemCode Products infringes at least Claim 1 of the '682 Patent under 35 U.S.C. § 271(a).

119. On information and belief Defendant has been aware of the existence of the '682 patent since at least May 2017, as founders of its company participated in the filing of earlier related patent applications leading to the '682 patent while they were employees at Bio-Rad. As described below, Defendant has been aware that its actions in testing and developing products and supplying products to others infringes the claims of the '682 patent.

120. On information and belief, Defendant is aware that the Accused Emulsion Products, in their normal mode of operation for generating droplet based emulsions in a microfluidic chip, practices each of the elements of Claim 1 of the '682 patent. By providing end users with the Accused Emulsion Products and instructions to use the products in an intended manner, which Defendant knows infringes at least Claim 1 of the '682 patent, Defendant has induced infringement under 35 U.S.C. § 271(b).

1 121. On information and belief, Defendant has supplied the Accused Emulsion Products
2 to end users to generate droplet based emulsions, knowing that such products are not a staple
3 article of commerce and knowing that when used in their intended manner do not have substantial
4 uses which do not practice claim 1 of the '682 Patent. As set forth in the paragraphs above, the
5 Accused Emulsion Products supplied by Defendant are specifically designed to generate droplet
6 based emulsions. Defendant's act of supplying a material and substantial component of claim 1 of
7 the '682 Patent, which is not a staple and for which there are not substantial non-infringing uses,
8 constitutes contributory infringement under 35 U.S.C. § 271(c).

9 122. Defendant's infringement of the '682 patent has been willful and deliberate because
10 Defendant's knew or should have known about the '682 patent and their infringement of that patent
11 but acted despite an objectively high likelihood that such acts would infringe the patent. On
12 information and belief, at least three of the individuals who developed the Accused Emulsion
13 Products are named inventors of the '682 patent who – while Bio-Rad employees, and on behalf of
14 Bio-Rad, which owns the '682 patent – were involved in the conception and/or reduction to
15 practice of the '682 patent and had knowledge of the patent since it issued in May 2017.

16 123. The marking requirements of 35 U.S.C. § 287 have been satisfied through,
17 including but not limited to, Defendant's actual knowledge of the '682 patent and infringement
18 thereof.

19 124. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered
20 and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm,
21 irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs'
22 remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and
23 permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue
24 suffering irreparable harm absent injunctive relief.

25 **SEVENTH CAUSE OF ACTION**

26 **Infringement of Patent No. 9,649,635**

27 125. Plaintiffs incorporate all of the above paragraphs as though fully set forth herein.
28

126. Defendant has infringed, and continues to infringe, literally and/or through the doctrine of equivalents, one or more claims of the '635 patent, including but not limited to claim 1, pursuant to 35 U.S.C. § 271(a), by making, using, selling, offering to sell, and/or importing within the United States, without authority, certain emulsions formation products, including without limitation, the Accused Emulsion Products.

127. For example, the Accused Emulsion Products infringe each element of claim 1, which states:

Claim 1. A system to form and concentrate an emulsion, comprising:

a device including a sample well configured to receive sample-containing fluid, a continuous-phase well configured to receive continuous-phase fluid, and a droplet well, the device also including a channel network having a first channel, a second channel, and third channel that meet one another in a droplet-generation region; and

an instrument configured to operatively receive the device and to create

(a) a first pressure differential to drive sample-containing fluid from the sample well to the droplet-generation region via the first channel, continuous-phase fluid from the continuous-phase well to the droplet-generation region via the second channel, and sample-containing droplets from the droplet-generation region to the droplet well via the third channel, such that the droplet well collects an emulsion including sample-containing droplets disposed in continuous-phase fluid, and

(b) a second pressure differential to decrease a volume fraction of continuous-phase fluid in the emulsion, after the emulsion has been collected in the droplet well, by selectively driving continuous-phase fluid, relative to sample-containing droplets, from the droplet well via the third channel.

Defendant infringes each element of claim 1 of the '635 patent for the following reasons:

128. The Accused Emulsion Products are droplet based emulsion systems that form thousands of emulsions (*i.e.* droplets) in parallel. On information and belief, these emulsions are formed by combining a sample and reagents with a gel bead, encapsulating them in a water-in-oil emulsion, and collecting those emulsions in outlet wells in a microfluidic chip.

129. On information and belief, after collecting the emulsion in the outlet well, the Chromium™ product incorporates a second pressure differential to decrease a volume fraction of continuous-phase fluid in the emulsions collected in the outlet wells by using a "pushback" step of pushing the oil from the outlet well back into the outlet channel towards the inlet wells to remove excess oil from under the droplets – *i.e.* concentrating the emulsions as claimed in step b above.

130. On information and belief, the Accused Emulsion Products include a microfluidics chip containing a plurality of emulsion formation units wherein each unit has a set of inlet wells that are configured to hold either the oil phase (*i.e.* continuous phase), the sample, (*i.e.* dispersed phase) or reagents (*e.g.* gel beads), and an outlet well to collect the emulsions.

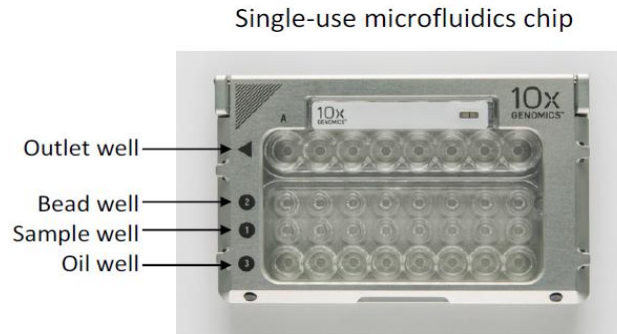


Exhibit H, Black Sales Presentation, p. 32.

131. On information and belief, the Accused Emulsion Products have a set of wells containing either the sample, oil, or other reagents (gel beads), which are fluidically interconnected by channels in the bottom surface of the chip to form a channel junction (red square) wherein the oil phase encompasses the sample and gel bead to generate emulsions. On information and belief, the channel junction or "droplet generation region" is the intersection of the oil phase channel, sample containing fluid channel, and outlet channel with the sample-containing emulsions.

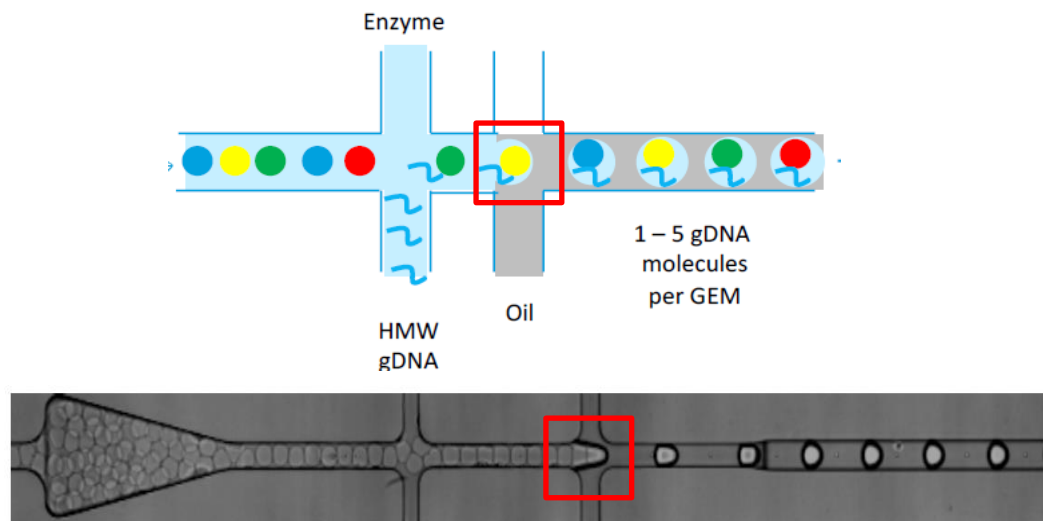


Exhibit H, Black Sales Presentation, p. 7.

132. On information and belief, the Accused Emulsion Products use an instrument, such as the Chromium™ Controller, to receive the microfluidic chip and chip holder.



Exhibit I, Chromium User Guide (Single Cell 3') at p. 14.

133. On information and belief, the Accused Emulsion Products use an instrument that is configured to drive sample containing fluid from the sample well and oil from the oil well to the channel junction, where the emulsions are formed, and then drive the emulsions through the outlet channel to the outlet well for collection.

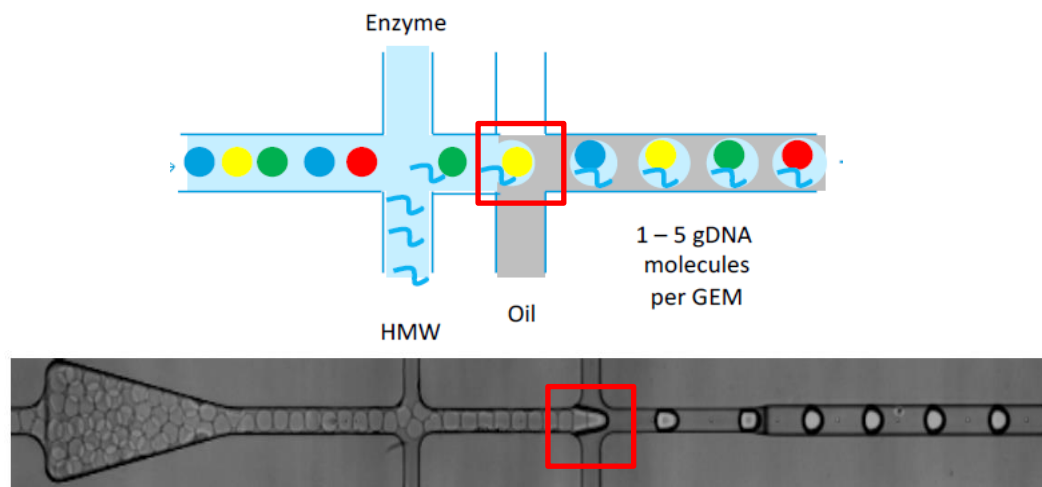


Exhibit H, Black Sales Presentation, p. 7.

134. On information and belief, the Accused Emulsion Products use an instrument, such as the Chromium™ Controller, that after collecting the emulsion in the outlet well, the instrument

1 incorporates a "pushback" step of pushing the oil from the outlet well back into the outlet channel
2 towards the inlet wells to remove excess oil from under the droplets – *i.e.* concentrating the
3 droplets.

4 135. On information and belief, Defendant began selling the Chromium™ Product in the
5 United States since at least February 2016 and the GemCode Product since at least February 2015.

6 136. On information and belief, Defendant commercially manufactures, uses, offers for
7 sale, or sells within the United States, or imports into the United States the Chromium™ and
8 GemCode Products. Defendant's making, using, selling, and offering for sale of the Chromium™
9 and GemCode Products infringes at least Claim 1 of the '635 Patent under 35 U.S.C. § 271(a).

10 137. On information and belief Defendant has been aware of the existence of the '635
11 patent since at least May 2017, as numerous founders of its company participated in the filing of
12 related patent applications leading to the '635 application while they were employees at Bio-Rad.
13 As described below, Defendant has been aware that its actions in testing and developing products
14 and supplying products to others infringes the claims of the '635 patent.

15 138. On information and belief, Defendant is aware that the Accused Emulsion
16 Products, in their normal mode of operation for generating droplet based emulsions in a
17 microfluidic chip, practices each of the elements of Claim 1 of the '635 patent. By providing end
18 users with the Accused Emulsion Products and instructions to use the products in an intended
19 manner, which Defendant knows infringes at least Claim 1 of the '635 patent, Defendant has
20 induced infringement under 35 U.S.C. § 271(b).

21 139. On information and belief, Defendant has supplied the Accused Emulsion Products
22 to end users to generate droplet based emulsions, knowing that such products are not a staple
23 article of commerce and knowing that when used in their intended manner do not have substantial
24 uses which do not practice claim 1 of the '635 Patent. As set forth in the paragraphs above, the
25 Accused Emulsion Products supplied by Defendant are specifically designed to generate droplet
26 based emulsions. Defendant's act of supplying a material and substantial component of claim 1 of
27 the '635 Patent, which is not a staple and for which there are not substantial non-infringing uses,
28 constitutes contributory infringement under 35 U.S.C. § 271(c).

140. Defendant's infringement of the '635 patent has been willful and deliberate because Defendant's knew or should have known about the '635 patent and their infringement of that patent but acted despite an objectively high likelihood that such acts would infringe the patent. On information and belief, at least three of the individuals who developed the Accused Emulsion Products are named inventors of the '635 patent who – while Bio-Rad employees, and on behalf of Bio-Rad, which owns the '635 patent – were involved in the conception and/or reduction to practice of the '635 patent and had knowledge of the patent since it issued in May 2017.

141. The marking requirements of 35 U.S.C. § 287 have been satisfied through, including but not limited to, Defendant's actual knowledge of the existence of the '635 patent and its infringement thereof.

142. As the direct and proximate result of Defendant's conduct, Plaintiffs have suffered and, if Defendant's conduct is not stopped, will continue to suffer, severe competitive harm, irreparable injury, and significant damages, in an amount to be proven at trial. Because Plaintiffs' remedy at law is inadequate, Plaintiffs seek, in addition to damages, temporary, preliminary, and permanent injunctive relief. Plaintiffs' business operates in a competitive market and will continue suffering irreparable harm absent injunctive relief.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs respectfully request the following relief:

- A. Enter judgement in favor of Plaintiffs on each of their claims;
- B. Enter judgement against Defendant adjudging the Asserted Patents to be valid, enforceable, and infringed;
- C. Award Plaintiffs injunctive relief;
- D. Award Plaintiffs an amount adequate to compensate for Defendant's infringement of the Asserted Patents, including lost profits and/or a reasonable royalty under 35 U.S.C. § 284;
- E. Grant Plaintiffs' pre-judgment and post-judgment interest on the damages caused to it by reason of Defendant's infringement of the Asserted Patents;
- F. Find that infringement has been willful and enhance damages accordingly;

1 G. Declare that this is an "exceptional case" under 35 U.S.C. § 285, and award
2 Plaintiffs their attorneys' fees, costs, and expenses that it incur prosecuting their claims; and

3 H. That Plaintiffs be awarded such other and further relief as this court deems just and
4 proper.

5 **DEMAND FOR JURY TRIAL**

6 Plaintiffs hereby demand trial by jury for all causes of action, claims, or issues in this
7 action that are triable as a matter of right to a jury.

8
9 DATED: July 31, 2017

QUINN EMANUEL URQUHART & SULLIVAN,
LLP

10
11
12 By



13 David Bilsker
14 Attorneys for Plaintiffs
15 BIO-RAD LABORATORIES, INC. AND
16 LAWRENCE LIVERMORE NATIONAL
17 SECURITY, LLC
18
19
20
21
22
23
24
25
26
27
28